Table of Contents

1 Python Assessment

1.1 Explain in brief, difference between Django, Pyramid and Flask.

Answer: Flask is primarily used to develop small applications with simpler requirements. Pyramid and Django are both user to develop larger applications.

1.2 If a list is nums=[0,1,2,3,4], what is nums[-1]?

Answer: nums[-1] = 4

1.3 Explain the output of the following piece of code-

>>> tuple=(123,'John')

>>> tuple*=2

>>> tuple

Answer: (123,'John',123,'John')

1.4 Differentiate between the append() and extend() methods of a list with an example.

Answer:

Append(): Adds its argument as a single element to the end of a list. The length of the list increases by one.

Extend(): Iterates over its argument and adding each element to the list and extending the list. The length of the list increases by number of elements in it's argument.

1.5 How do you remove the leading whitespace in a string? For example, leading whitespace in a string is the whitespace in a string before the first non-whitespace character. Eg. '   Maersk'

Answer: string.lstrip()

1.6 What is the enumerate () function in Python? Explain with an example.

Answer: The built-in enumerate() function allows us to loop over a list of items while keeping track of the index value in a separate variable.

Example: values = ["a","b","c"]

For count,value in enumerate(values):

Print(count,value)

Output : 0   a

1   b
2   c

1.7 Explain atleast three advantages of NumPy Array over the list in python.

Answer: 1. Array are by default Homogeneous, which means data inside an array must be of the same Datatype. (Note you can also create a structured array in python).

2. Numpy array has the various function, methods, and variables, to ease our task of matrix computation.

3. Element wise operation is possible.

1.8 List out all the possible differences between method and constructor in Python.

Answer: **Method:** It a function which is the member of a class. Methods consists of statements that may or may not return an output.

Constructor: It is a special type of method that has the same name the class name. These methods are used to initialize an object's state.

1.9 Define generator and iterator with an example in Python. What is Monkey Patching?

Answer: An iterator is an object which contains a countable number of values and it is used to iterate over iterable objects like list, tuples, sets, etc.

Generators : It is another way of creating iterators in a simple way where it uses the keyword "yield" instead of returning it in a defined function. Generators are implemented using a function.

1.10   What will the output of the following code snippet:

```
>>> def squares(n):
i=1
while(i<=n):
yield i**2
i+=1
>>> for i in squares(7):
print(i)
```

Output:
1
4
9
16
25
36
49

2 Embedded Theory Questions

2.1 How I/O devices are classified for embedded system?

Answer: I/O devices are classified as either character-mode devices or block-mode devices. The classification refers to how the device handles data transfer with the system.

2.2 What is the difference between Microprocessor and Microcontroller?

Answer: Microprocessor consists of only a Central Processing Unit, whereas Micro Controller contains a CPU, Memory, I/O all integrated into one chip.

2.3 What is a Watchdog Timer?

Answer: A watchdog timer is a piece of hardware that can be used to automatically detect software anomalies and reset the processor if any occur.

2.4 What are common errors in Embedded system?

Answer: 1.Damage of memory devices static discharges and transient current.

2.Address line malfunctioning due to a short in circuit.

3.Data lines malfunctioning.

4.Due to garbage or errors some memory locations being inaccessible in storage.

2.5 What is the need for an infinite loop sometimes in embedded systems?

Answer: The infinite loop is necessary because the embedded software's job is never done. It is intended to be run until either the world comes to an end or the board is reset, whichever happens first.